

ABSTRACT OF THE DISCLOSURE

Electrochemical apparatus and methods that support periodic, non-steady state, or discontinuous operation without suffering degradation of materials or loss of efficiency. The invention provides a means for positioning one or more electrodes into contact with electrolyte and means for retracting the one or more electrodes out of contact with the electrolyte. The means for positioning and means for retracting may be the same device or different devices. The means for positioning and means for retracting may be designed to provide automatic, passive, or fail-safe retraction of the electrode upon a given shutdown condition, such as a voltage of less than one Volt being applied between the first and second electrodes, expiration of a time period, an ozone concentration greater than a setpoint ozone concentration, contact pressure of less than 5 psig, and combinations thereof.